

EXHIBIT 42

Technology Royalty Rates

Technology Royalty Rates In SEC Filings

By Thomas R. Varner

I. Introduction

Previous studies of technology license agreements have been limited either to analyzing relatively small sets of agreements or to analyzing a mix of complete agreements and general descriptions of agreements from a variety of sources. This study is unique in that it considers a large number of complete, publicly available agreements from one source, agreements submitted to the U.S. Securities & Exchange Commission (SEC) from 1994 to 2009. The dataset used for this study is also unique in that it contains a large number of royalty-based agreements previously granted Confidential Treatment by the SEC and obtained in unredacted form under the Freedom of Information Act.

I collected a total of 2,963 agreements as part of this study by searching for agreements submitted by high-tech and biotech firms to the SEC—covering over 40 Standard Industrial Classification (SIC) codes—that contained a running, or earned, royalty expressed as a percentage of licensed product sales. This unique dataset is comprised of actual license agreements submitted to the SEC as exhibits rather than simply general descriptions of those agreements, and is based on licenses that meet the SEC's threshold of materiality. These characteristics, along with the large number of agreements collected, make this dataset well suited to conducting a variety of analyses across multiple industries, as well as analyses of selected subsets of agreements. After presenting my analysis of all agreements in the dataset, I devote the remainder of this paper to findings related to analysis of almost a thousand patent licenses in the dataset. These patent licenses are comprised of Bare Patent licenses (i.e., rights to use patented technology only), Patent plus Know-How licenses (i.e., rights to use patented technology plus rights to additional information such as laboratory data, market analysis, or related studies), and Patent Settlement agreements.

There are several notable findings of this study. First, royalty rates are highly dependent on the nature of the agreements, with product licenses and distribution agreements exhibiting among the highest royalty rates, and Bare Patent licenses exhibiting among the lowest royalty rates for each industry category. Second, royalty rates for patent licenses that include technology "Know-How" generally have higher royalty rates than licenses that cover only Bare Patent

rights. Third, patent licenses in which the licensor is a commercial entity generally have higher royalty rates than patent licenses in which the licensor is an individual, an educational institution, a government agency, or a non-profit organization. Fourth, observed Patent Settlement agreements generally have higher royalty rates than Bare Patent licenses. (I discuss later in this paper a likely bias in the dataset toward settlement agreements in which a court has made determinations favorable to the patent holder). Additional findings presented in this paper relate to the relationship between royalty rates and the selection of a royalty base, analysis of agreements with variable or "mixed" royalty rates, and analysis of non-royalty financial provisions.

The general findings of this study should not be interpreted as a strict formula for determining a royalty rate for a given license for several reasons. First, this analysis was based on the stated terms in agreements without additional research of the technology or parties involved. Thus, this study is not a substitute for a thorough knowledge of the specific circumstances of the parties, the contribution of the licensed technology to the licensed products, or the availability of substitute technologies.

Second, a large number of technology licenses filed with the SEC specify a "royalty" but do not include a "running" or "earned" royalty expressed as a percentage of sales. Such agreements may express royalties as a dollar (\$) amount per licensed product sold, a series of fixed payments, or some other form of financial consideration. Although I collected these agreements as part of my general research on technology licenses, they were not included in the dataset used for this analysis.

Third, not all technology licenses specify a "royalty," so one should not assume that all royalty-based licenses reflect all technology licenses. As part of a separate research effort, I conducted a search for patent licenses submitted by SEC filers that did not include the term "royalty." The consideration in such "non-royalty" patent licenses can include fixed fees, nominal payments, and/or non-monetary

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considerations (e.g., release from pending litigation or cross-licensing rights).

Fourth, the dataset is limited to material agreements submitted to the SEC. My personal experience in reviewing technology agreements as part of consulting engagements (performed under confidentiality agreements or protective orders) is that the majority of firms' agreements often do not rise to the level of being material agreements as defined by the SEC. Furthermore, based on my analysis of licenses in the dataset, and supported by discussions with licensing practitioners, royalty rates expressed in agreements within firms' entire licensing portfolios are typically lower than royalty rates observed in the set of agreements analyzed in this dataset.

The remainder of this paper is divided into the following sections: Section II describes the methodology used in the selection, coding, and analysis of licenses in the dataset; Section III discusses findings of the analysis; and Section IV presents conclusions and suggestions for further research.

II. Methodology

A. Selection of License Agreements and Materiality

All of the agreements used in this study were obtained by searching company filings to the SEC including registration statements, annual and quarterly reports, proxy statements, and current reports. The SEC requires that registrants disclose in their filings "material definitive agreements not made in the ordinary course of business."¹ While all of the agreements in the dataset were submitted by filers to the SEC, some of the agreements are between parties that were not SEC registrants on the effective date of the agreements. For example, agreements included as part of initial registration statements to the SEC (e.g., S-1 forms) are often between parties that were not SEC registrants on the effective date of the agreements.

Many of the agreements filed with the SEC are available online only in redacted form, i.e., they are marked by the filer as "Confidential Treatment Requested."² In some industries, such as the pharmaceutical industry, over 75 percent of the technology agreements filed with the SEC are granted Confidential Treatment. When a filer's request for Confidential

Treatment is granted by the SEC, those provisions related to financial consideration are typically in the redacted portions of the filing. Included in this study's dataset, however, are over 800 previously redacted royalty-based license agreements that were obtained under the Freedom of Information Act (FOIA) in their original unredacted form.

B. Royalty Rate Versus Total Consideration

A frequently used measure of comparison between license agreements is a "running" or "earned" royalty rate expressed as a percentage of sales (e.g., a running royalty of 5 percent of net sales).³ However, one should not rely solely on running royalty rates as the basis for comparison between agreements for a number of reasons. First, a royalty rate should not be considered in isolation from its "royalty base," that is, the revenues upon which the royalty rate is multiplied to arrive at total royalties. Second, an agreement's total consideration may include additional financial terms such as upfront or other fixed fees, milestone payments, minimum annual royalties, or equity transfers. Third, license agreements may also include non-financial considerations such as mutual releases from lawsuits, limitations on fields of use or geographic markets, or cooperative arrangements between the parties for joint development or marketing activities.

C. Classification of Parameters

Once the set of agreements in the dataset was collected, selected information was identified and coded for each agreement. This information included: (1) the type of technology licensed (e.g., software, electronics, or pharmaceutical); (2) the type of licensor and licensee (commercial, individual, educational, non-profit, or government entity); (3) the nature of the agreement (e.g., Bare Patent, Patent Settlement, or Joint Venture); (4) whether the SEC filer was the licensor or licensee; and (5) the maximum and minimum running royalty rates. Additionally, for patent licenses, I also coded information about fixed license fees, minimum annual royalties, equity transfers, sub-licensing provisions, and adjustments or reductions to base royalty rates.

I classified license agreements four separate ways: (1) by the nature or industry of the licensors' and licensees' business; (2) by the nature of the licensed technologies; (3) by the nature of the licensed products; and (4) by the SEC filer's industry. The general

1. E.g., Form 8-K General Instructions, SEC 873, Item 1.01 Entry into a Material Definitive Agreement.

2. The SEC permits a registrant to redact for a specified period of time those portions of its filings that are "trade secrets."

3. A small number of agreements identified in the search specify a royalty based on a measure of gross or operating profits. These agreements are excluded from the dataset.

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findings of this paper are similar under these four different classification approaches, so for consistency, this paper presents findings based on agreements classified by the SEC filer's industry.

I searched for technology license agreements submitted by SEC filers within 44 different SIC codes over the period 1994 through 2009 that I broadly group into High-tech and Biotech industries. There were over 5,000 firms listed as SEC filers in the High-tech category, which included computer software⁴ and hardware industries⁵ (computer hardware, electronic components, instrumentation, and telecommunication), and over 1,800 firms in the Biotech category, which included medical device⁶ and pharmaceutical industries.⁷

D. Agreement Dates

Chart 1 is a distribution of licenses from the dataset organized by effective date of each agreement. Of the nearly 3,000 agreements included in the dataset, about half are dated 1999 or earlier and half are dated 2000 or later. Approximately 30 percent of all agreements in the dataset are previously redacted agreements granted Confidential Treatment by the SEC and obtained under the Freedom of Information Act.

The agreements are skewed toward earlier years for two reasons. First, an agreement may be submitted to the SEC shortly after an agreement's effective date as in a Current Report (8-K), Quarterly Report (10-Q), or Annual Report (10-K). But an agreement also may be submitted as part of a registration statement (*e.g.*, S-1), in which case the agreement may predate the filing by several years. Second, the dataset includes previously redacted agreements in which a grant of Confidential Treatment has expired, a period that is often five or more years after the agreement is first filed in redacted form with the SEC. Thus, although approximately 30 percent of the dataset is composed of previously redacted agreements, the dataset includes a higher proportion of these agreements in earlier years.

III. Findings Of Analysis

A. Royalty Rates Vary by Type of Agreement

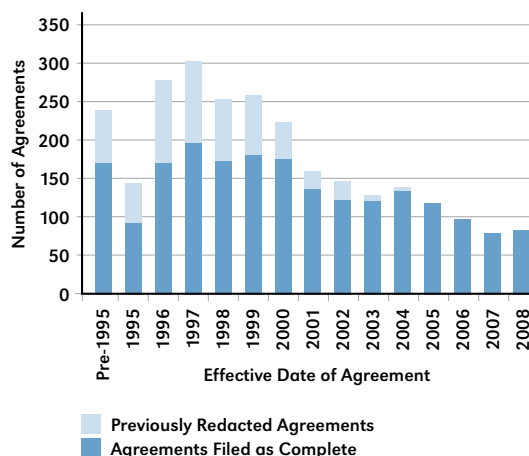
Table 1 is a summary of royalty rates organized by type of agreement and industry. "Software" includes

prepackaged software, computer programming, systems design, processing, and data preparation firms; "Hardware" includes computer hardware, electronic components, instrumentation, and telecommunication firms; "Medical" includes medical, surgical, dental, ophthalmic, and orthopedic apparatus firms; and "Pharma" includes medicinal chemical, pharmaceutical preparation, diagnostic substances, biological product, medical laboratories, and biological research firms.

There are several noteworthy results of the findings shown in Table 1. First, royalty rates vary a great deal by type of agreement. The range of median royalty rates from Bare Patent licenses (among the lowest observed royalty rates in Table 1) to Product/Distribution licenses (among the highest observed royalty rates in Table 1) is over three-fold, from 3.0 percent to 10.0 percent for all industries.

Second, ranking of the agreements by royalty rates is relatively consistent across industries. For example, Product/Distribution licenses typically have among the highest median royalty rates among all types of agreements for each industry examined, whereas Bare Patent licenses typically have among the lowest median royalty rates among the agreement types shown in Table 1. Although not shown in Table 1, this relatively consistent ranking is also observed when the industries are further broken out by Standard Industrial Classification (SIC) codes. Third, in almost every industry and agreement category in Table 1, the average royalty rate is higher than the median royalty rate, thus indicating a positive skew (or long right-hand tail) to the distribution of royalty rates.

Chart 1. Distribution of Agreement Dates in Dataset



4. Computer Software: SIC 7370-7374

5. Hardware: Computer Hardware: SIC 3570-3572, 3575-3577, 3651; Electronic Components: SIC 3670, 3672, 3674, 3679; Instrumentation: SIC 3821-3827, 3829; Telecommunications: SIC 3661, 3663, 3669, 4812, 4813, 4822, 4899

6. Medical Devices: SIC 3841-3845, 3851, 5047

7. Pharmaceutical: SIC 2833-2836, 8071, 8731

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Table 1. Running Rates by Agreement Type and Industry¹
Median (Average in Parentheses)

Agreement Type	Industry				
	All	Software	Hardware	Medical	Pharma
All Types	5.0% (8.2%) n = 2,963	10.0% (17.3%) n = 515	5.0% (7.0%) n = 489	5.0% (5.6%) n = 520	5.0% (6.2%) n = 1,439
Product/ Distribution ²	10.0% (15.4%) n = 339	14.4% (18.9%) n = 180	6.0% (12.8%) n = 58	5.0% (7.9%) n = 44	8.0% (12.6%) n = 57
Development/JV ³	6.5% (9.5%) n = 482	17.0% (21.2%) n = 65	4.0% (8.1%) n = 71	6.0% (6.7%) n = 53	6.0% (7.7%) n = 293
Acquisition ⁴	5.7% (9.1%) n = 350	10.0% (16.4%) n = 90	5.0% (6.4%) n = 78	5.0% (6.1%) n = 56	5.0% (6.8%) n = 126
Settlement ⁵	5.0% (6.1%) n = 87	4.6% (7.6%) n = 10	6.0% (7.1%) n = 12	5.0% (5.5%) n = 33	4.6% (5.9%) n = 32
Patent (+) ⁶	4.5% (5.1%) n = 570	4.0% (4.4%) n = 17	4.4% (4.9%) n = 95	5.0% (5.4%) n = 109	4.5% (5.1%) n = 349
Research ⁷	4.0% (4.4%) n = 118	5.5% (5.5%) n = 2	3.0% (5.3%) n = 5	3.6% (4.0%) n = 18	4.0% (4.4%) n = 93
Bare Patent ⁸	3.0% (3.7%) n = 343	3.0% (3.3%) n = 17	3.5% (3.9%) n = 56	3.5% (3.9%) n = 73	3.0% (3.6%) n = 197
Other ⁹	5.0% (8.9%) n = 674	11.6% (18.1%) n = 134	5.0% (6.9%) n = 114	4.0% (5.6%) n = 134	5.0% (6.9%) n = 292

1. All percentages refer to royalty rates applied to licensed product sales. Most agreements in the dataset specify a royalty base comprised of net sales as opposed to gross sales. Agreements that specify a royalty based on gross or operating profits are excluded from the dataset. Rates in Table 1 are base royalty rates prior to royalty reductions (e.g., patent stacking or combination product reductions).

2. Product licenses consist of licenses for defined or complete products. Distribution agreements include marketing and promotion agreements.

3. Joint Venture agreements include collaboration, cooperation, partnership, and strategic alliance agreements.

4. Acquisition agreements include purchase, merger, and acquisition agreements.

5. Settlement agreements include settlements from a number of different types of lawsuits including patent infringement, breach of contract, and class action suits.

6. Patent (+), or Patent plus Know-How, agreements refers to patent license agreements that also include a grant for additional intellectual property, e.g., know-how, confidential information, data, discoveries, and formulas.

7. Research agreements generally relate to sponsored research programs between educational or non-profit organizations and private firms.

8. Bare Patent licenses refer to license agreements that grant the licensee only rights to a patent (or to the technology covered by a pending patent application) and not to any additional information or technology (e.g., know-how).

9. Other licenses include consulting, employment, termination, manufacturing, supply, original equipment manufacturer (OEM), and database licenses.

These results highlight the importance of distinguishing between different types of license agreements when analyzing royalty rates. For example, aggregating all types of software licenses together results in a median royalty rate of 10 percent. However, this aggregate royalty rate is considerably higher than the median royalty rate for Bare Patent software licenses (3 percent) and lower than the median royalty rate for software Product/Distribution agreements (14 percent).

B. Adjustments to Royalty Rates

The royalty rates shown in Table 1 are the “base” or unmodified rates reflected in the agreements; however, many agreements include provisions that reduce these base royalty rates. Examples of royalty reduction provisions include royalty stacking, patent validity, combination, and competitor entry provisions. Royalty Stacking provisions allow for reductions in a royalty rate if the licensee is required to take a license from a third party in order to make

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Table 2. Provisions for Royalty Rate Adjustments in Patent Licenses

Licensing Provision	Frequency of Occurrence	
	High-tech	Biotech
Royalty Stacking	3%	21%
Invalid or Unenforceable Patents	4%	12%
Combination of Products	2%	6%
Entry of Competition	1%	7%

High-tech includes licenses from computer software, computer hardware, electronic components, instrumentation, and telecommunication firms. Biotech includes licenses from medical device and pharmaceutical firms.

or sell licensed products. Invalid or Unenforceable provisions allow for royalty reductions if a court determines that the licensed patents are found to be invalid or unenforceable. Combination of Product provisions allow for royalty reductions if the licensed product is sold in combination with other products. And Entry of Competition provisions allow for royalty reductions in the event that competitors with similar technology, such as generic pharmaceuticals, enter a given market. Table 2 presents the frequency of royalty reduction provisions in Bare Patent licenses

and Patent plus Know-How licenses by broad industry category. While royalty reduction formulas can vary considerably from agreement to agreement, the median of the maximum royalty reduction among the licensing provisions shown in Table 2 is 50 percent of the base royalty rate.

High-tech includes licenses from computer software, computer hardware, electronic components, instrumentation, and telecommunication firms. Biotech includes licenses from medical device and pharmaceutical firms.

C. Royalty Rate Premium for Patent Plus Know-How

Bare Patent licenses are those agreements that grant a licensee rights to use only technology covered by one or more U.S. patents.⁸ In contrast, Patent plus Know-How, or “Patent (+),” licenses grant a licensee rights covered by a Bare Patent license plus rights to additional intellectual property. This additional intellectual property is often specified in agreements as “Know-How,” but may also be described as laboratory or research data, databases, market analyses, forecasts, or materials in support of a patent application. Table 3 summarizes royalty rates from agreements in which there are over 40 patent licenses within a

8. Bare Patent licenses in the dataset typically grant rights to one or more issued U.S. patents, but there are also instances of agreements in the dataset that grant rights only to a pending U.S. patent and/or to non-U.S. patents.

Table 3. Median Royalty Rates for Bare Patent and Patent Plus Know-How Licenses

Field/SIC Code		Patent + Know-How Licenses [a]	Bare Patent Licenses [b]	Know-How Royalty Premium [c] = [a] - [b]
All High-tech and Biotech	All	4.5% (n = 570)	3.0% (n = 343)	1.5%
Electromedical Apparatus (MED)	3845	5.0% (n = 25)	2.0% (n = 23)	3.0%
Biological Products (PHR)	2836	5.0% (n = 98)	3.0% (n = 65)	2.0%
Surgical & Medical Instr. (MED)	3841	5.0% (n = 69)	3.6% (n = 40)	1.4%
Semiconductors (ELE)	3674	3.5% (n = 31)	2.4% (n = 10)	1.1%
Pharmaceutical Preparations (PHR)	2834	4.0% (n = 156)	3.0% (n = 70)	1.0%
Diagnostic Substances (PHR)	2835	4.0% (n = 40)	3.5% (n = 34)	0.5%
Physical & Biological Research (PHR)	8731	3.5% (n = 39)	3.0% (n = 19)	0.5%

SIC 3845 Electromedical & Electrotherapeutic Apparatus
SIC 2836 Biological Products (No Diagnostic Substances)
SIC 3841 Surgical & Medical Instruments & Apparatus
SIC 3674 Semiconductors & Related Devices

SIC 2834 Pharmaceutical Preparations
SIC 2835 In Vitro & In Vivo Diagnostic Substances
SIC 8731 Services-Commercial Physical & Biological Research

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single SIC code in the dataset.

Table 3 shows that across all industries included in the dataset there exists a royalty premium of 1.5 percent for a licensor's Know-How above the royalty rates observed for Bare Patent licenses (based on median royalty rates). The magnitude of this Know-How royalty premium varies across industries from a relatively small value of 0.5 percent among patent licenses for Physical & Biological Research (SIC 8731) firms, to a larger premium of 3.0 percent among patent licenses for Electromedical Apparatus (SIC 3845) firms.

D. Royalty Rate Premium for Observed Patent Settlement Agreements Over Bare Patent Licenses

The dataset also includes agreements that relate to settlement of litigation. I divided Settlement agreements from the dataset into two categories, those relating to patent infringement suits and those relating to all other types of suits (typically breach of contract suits). Virtually none of the Patent Settlement agreements in the dataset include a grant for Know-How, so I compared royalty rates in Patent Settlement agreements with Bare Patent licenses. Table 4 shows that the average and median royalty

rates of Patent Settlement agreements are 2.2 percent and 2.0 percent higher than Bare Patent licenses (excluding settlements), respectively.⁹

However, one should not conclude from this table that there exists a royalty rate premium among all patent settlement agreements. This table reflects only those patent settlement agreements found in SEC filings; it does not reflect all patent settlement agreements. If there is a determination in a patent litigation proceeding that is not favorable to the patent holder, then it is reasonable to expect that such a determination will result in a lower royalty rate (or even no license agreement at all). Consequently, such agreements are less likely to be submitted to the SEC as a material agreement, and thus, are not included in this dataset.

E. Patent License Royalty Rates by Type of Licensor

The licensor for each agreement in the dataset was categorized as either a commercial or non-commercial entity, in which non-commercial entities include educational institutions, individuals, government agencies, and non-profit organizations. Tables 5A and 5B present median royalty rates by type of licensor for: all industries in the dataset; the medical device industry; and the pharmaceutical industry. Tables 5A and 5B show that patent licenses in which the licensor was a commercial entity had a higher median royalty rate than licenses in which the licensor was a non-commercial entity. This difference could exist for a number of reasons; for example, it could be that commercial entities as licensors command higher royalty rates because of the nature of the technology (*e.g.*, greater commercial applications or more developed technology) or because commercial entities may have greater negotiating

Table 4. Patent Settlement Royalty Rates and Bare Patent Royalty Rates			
	Patent Settlement Agreements [a]	Bare Patent Licenses [b]	Settlement Royalty Premium [c] = [a] - [b]
Count	55	343	
Average Royalty Rate	5.9%	3.7%	2.2%
Median Royalty Rate	5.0%	3.0%	2.0%

Table includes Bare Patent licenses and Patent Settlement agreements from all High-tech and Biotech industries in dataset.

Table 5A. Median Royalty Rates by Type of Licensor Patent + Know-How Agreement Royalty Rates			
Industry	Licensor Type		
	Commercial [a]	Non-Commercial [b]	Difference [c] = [a] - [b]
All	5.0% (n = 357)	3.8% (n = 213)	1.2%
Medical	5.0% (n = 73)	4.0% (n = 36)	1.0%
Pharma	5.0% (n = 193)	3.0% (n = 156)	2.0%

9. The average and median royalty rates for the 32 Settlement agreements in the dataset that were not associated with patent infringement suits were 6.5 percent and 4.6 percent, respectively.

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**Table 5B. Median Royalty Rates by Type of Licensor
Bare Patent Agreement Royalty Rates**

Industry	Licensor Type		
	Commercial [a]	Non-Commercial [b]	Difference [c] = [a] - [b]
All	3.5% (n = 139)	3.0% (n = 204)	0.4%
Medical	4.0% (n = 27)	3.4% (n = 46)	0.6%
Pharma	4.0% (n = 57)	3.0% (n = 140)	1.0%

power relative to non-commercial licensors.

F. No Patent Royalty Rate Premium Between Licensees with Low and High Revenues

I also examined financial data of licensees to patent agreements (Bare Patent and Patent plus Know-How agreements) who were SEC filers over the subject period. I divided the licensees into those firms with relatively low revenues over the reported period (less than \$10 million in total revenues), those firms with medium revenues (\$10 million to \$100 million in total revenues), and those firms with high revenues (greater than \$100 million in total revenues). There was no statistically significant difference between patent license royalty rates observed for firms among these three categories, even when agreement type, licensor type, and industry distinctions were included in the analysis.

G. Importance of Selecting the Appropriate Royalty Base

The discussion so far has focused on royalty rates as opposed to the royalty base, that is, the sales upon which a royalty rate is multiplied to arrive at total royalties. As part of this study I examined not only royalty rates but also the licensed technology and the licensed products. The relationship observed between a licensed technology and a licensed product is typically straightforward; for example, if a compound is licensed for use in a specified pharmaceutical drug, then sales of that drug will typically be designated as the royalty base. Another example would be software technology that is licensed for use in a software product, and sales of that software product will typically be designated as the royalty base.

However, there are exceptions to this general relationship. For example, there are Bare Patent licenses in the dataset in which software technology is licensed for use in non-software products such as electronic components or computer hardware devices. Whereas the median royalty rate for Bare Patent licenses cov-

ering software technology for use in software products is 4.0 percent, the median royalty rate for Bare Patent licenses covering software technology for use in computer hardware devices is 1.3 percent. This lower royalty rate could reflect relatively higher sales prices for the hardware devices than for software products, or it also could reflect a lower relative contribution of the software

technology to the hardware product. Thus, any prudent analysis of royalty rates for individual agreements should involve consideration of the applicable royalty base.

H. Analysis of Mixed Versus Flat Patent Royalty Rates

Many technology license agreements specify a range of royalty rates rather than a single rate. For example, an agreement may specify a 3 percent running royalty rate for revenues less than \$10 million and a 5 percent rate for revenues greater than \$10 million. I refer to such agreements as having “mixed royalty rates” as opposed to a “flat” or single royalty rate. The applicable royalty rate in mixed royalty rate agreements may be based on a number of factors, such as the cumulative amount of revenues, the date of the relevant revenue, or performance in meeting certain milestones (*e.g.*, receiving regulatory approval for a pharmaceutical product).

My analysis of patent licenses in the Pharmaceutical industry with mixed royalty rates shows that approximately 60 percent called for either higher royalty rates as licensed product revenues increased or royalty rates that increased over time. For all other industries in the dataset almost 90 percent of the patent licenses that specified mixed royalty rates called for either lower royalty rates as licensed product revenues increased or royalty rates that decreased over time.

I. Analysis of Additional Patent Licensing Provisions

Technology licenses often specify a number of financial terms in addition to a running royalty. For example, over 75 percent of all Bare Patent and Patent plus Know-How licenses in the dataset include upfront payments, milestone payments, or equity transfers. Table 6 is a summary of the frequency of selected additional financial provisions in patent licenses.

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**Table 6. Additional Financial Provisions
in Patent Licenses**

Licensing Provision	Frequency of Occurrence	
	High-tech	Biotech
Upfront Fee (Cash)	52%	69%
Minimum Annual Royalty	16%	36%
Equity/Shares Granted or Exchanged	19%	26%
Separate Sublicensing Royalty Rates	8%	17%

High-tech includes licenses from computer software, computer hardware, electronic components, instrumentation, and telecommunication firms. Biotech includes licenses from medical device and pharmaceutical firms.

IV. Conclusions

In this paper, I examine observable factors in technology license agreements collected from SEC filings and which specified a running royalty rate. Of course, these observed factors are not the only factors that would enter into the minds of parties to a license agreement. Among other factors, parties also would consider substitute technologies, they would have insights into the contribution of the licensed technology to consumer demand for the licensed products, and they would have an understanding of the effects of the contract terms (both financial and non-financial) on their businesses. All of these additional factors could affect an individual agreement's specified royalty rate.

There are several findings of this analysis. First, royalty rates vary significantly based on the type of license agreement. For example, Bare Patent licenses

generally have lower royalty rates than patent licenses that incorporate technology Know-How, and these licenses in turn generally have lower royalty rates than Product/Distribution, Development, and Acquisition agreements. Also, royalty rates tend to be higher when the licensor is a commercial entity as opposed to a non-commercial entity, such as an individual, educational institution, non-profit organization, or government agency.

There are several areas in which to extend the analysis presented in this paper. One could examine the differences between technology licenses that specify running royalty rates and those that specify other forms of consideration. One could develop multi-factor regression models to examine how the combination of observable factors affects royalty rates. One could examine more closely the nature of the technology being licensed for each industry type (e.g., therapeutic vs. diagnostic or small molecule vs. large molecule technology for pharmaceutical licenses), then evaluate the impact of such distinctions on royalty rates. Or, for patent license agreements, one could examine more closely the licensed patents to determine the availability of similar patented technology, the issuance of related foreign patents, or the number of references made to the covered patents by other patents.

Finally, although this analysis was based on a large dataset of material agreements, the general findings of this study should not be interpreted as a strict formula for setting royalty rates for a specific agreement. The findings of this study are not a substitute for a thorough knowledge of the specific circumstances of the parties to an individual agreement, the contribution of the licensed technology to the licensed products, or the availability of acceptable substitutes. ■